

**HELSINKI UNIVERSITY OF TECHNOLOGY**  
**Communications Laboratory**

**S-72.423 / S-72.422 Telecommunication Systems / Televiestintäjärjestelmät**

Examination on Monday, 23.4.2001, 16-19, S4

*Note: This is a closed-book examination and thus no lecture or tutorial handouts are allowed to be present*

1. Answer the following questions True (T), False (F) or Unknown (U). The correct answer yields +1p, a false answer -1p, and the unknown answer 0p.

- (a) Hybrid circuit is used to multiplex digital and analog signals in ISDN exchanges
- (b) WCDMA downlink is I/Q multiplexed to reserve data and control information for I and Q channels to circumvent EMC problems
- (c) NEC -circuit is based on coherent subtraction of interface signal
- (d) HSCSD supports V.42 bis compression
- (e) Rate of DPDCH:n may vary at the intervals of 1 ms
- (f) LAI identifiers are applied in the GSM - system for location updates.
- (g) HLR, VLR ja BSC are databases of a GSM - system.
- (h) I.200-series recommendations are focused on ISDN services
- (i) While making an ISDN-connection, SAPI-address is transmitted from A-subscriber to B-subscriber
- (j) SVC is usually longer lasting than PVC

2 (a). Describe three methods to connect a phone call in an analog telephone exchange ( You may apply historical perspective or routing)

- (b) List three methods to apply call forwarding
- (c) Sketch and explain function of a line interface circuit
- (d) Use an example to describe channel associated signaling

3 (a) Describe briefly different functions of ATM:n protocol layers

(b) Describe briefly dynamic channel selection and allocation in DECT!

4 (a) Describe function of SCCP (Signalling Connection Control Part) in common channel signaling ? Why and how SCCP:tä is applied in GSM-systems?.

(b) Describe briefly Common channel signaling concepts DPC, OPC, SSP, SCP and STP

5 (a) Describe usage of different codes in WCDMA -system ?

(c) Describe briefly three main tasks of Uu-inteface protocols!